

# What Are Nuclear Weapons For?

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The June ACG *News & Views* article, “Preemption Paranoia: Confusing Nuclear Weapons With Countering Terrorism,” addresses a recent article by Roger Speed and Michael May (“Dangerous Doctrine,” *Bulletin of the Atomic Scientists*, March/April 2005, pp. 38-29) that talks about current Administration doctrines of pre-emption in the *National Security Strategy* and the *Nuclear Posture Review* (though in fact says nothing about “countering terrorism.”) The Speed and May article argues that the U.S. does not need either new low-yield or new “bunker-buster” nuclear weapons; the June *News & Views* article offers arguments that the U.S. does need them. The article you are reading questions those arguments.

Deliverable nuclear weapons have a strong and credible deterrent, in the form of a threat of devastating retaliation, against others who might use or threaten to use nuclear weapons against them. The June article, however, wants more from nuclear weapons than that: it wants a deterrent “...against those that would challenge the resolve of U.S. policymakers.” Early on, the article identifies the dilemma in trying to use nuclear weapons in this way. On the one hand, nuclear weapons should be weapons of “last resort,” the use of nuclear weapons would be a failure of deterrence, and a pre-emptive strategy would be inconsistent with this line of thinking. On the other hand, we should keep a “blurry line as to when, where, or how nuclear weapons might be deployed,” as to keep adversaries in doubt about which actions we want to deter might evoke a nuclear response from us.



The proffered answer to this dilemma is new nuclear capabilities, promising less collateral damage, that are less “self-detering.” That is, they should make the U.S. use of nuclear weapons at least *seem* to be more likely in a crisis, rather than being seen as “too powerful to threaten to use.” In other words, against certain threats, we are bluffing, and the new weapons will make the bluff more convincing. But then a new dilemma arises: the less terrible nuclear weapons become, the less threatening they are, and the weaker the deterrent they offer.

To try to get out of this second dilemma, the June article offers a dubious conception of the requirement for deterrence: “...potential adversaries should question their ability to create a sanctuary from our nuclear capabilities.” There must be no places where “...key capabilities can be maintained during conflict.” In other words, the nuclear deterrent must not only threaten the potential challenger of U.S. policies with destruction of things he values—it must threaten him with the destruction of *everything* he values. These things that should not be allowed “sanctuary” include “...underground facilities, military sites placed in urban settings, and mobile threats.”

Logically, this sounds wrong: if deterrence works, it should be sufficient to threaten the opponent with the loss of more than he could gain by the action we are attempting to deter. Even rogue state dictators value many things (such as the continuation of their rule) that can be threatened without use of nuclear weapons. That a given regime can only be deterred by the loss of one or two tunnels in the mountains just doesn’t make sense.

What is more, we had better hope that the idea that *all* targets must be held at risk is wrong, because the prospects are exceedingly slim that either lower-yield nuclear weapons or nuclear weapons intended to attack deeply buried targets could actually preclude the named “sanctuaries.” Still less could they be expected to do so without “self-detering” collateral damage. For detailed analysis of these missions, see the two Oelrich articles cited below in the “Recommended Reading” box. Here, let’s just take a quick overview.

**Underground Facilities.** There are, no doubt, many buried facilities around the world that the U.S. military would like to be able to target. (But, whether they really know what those facilities contain is another

question—cf. Iraq case.) Many of these facilities are designed to be out of reach of destruction by conventional bombs. If the U.S. developed nuclear weapons intended to destroy these facilities, there is nothing to stop their owners from digging deeper tunnels into mountains until they are sheltered from nuclear attack as well. Moreover, tunnels underground can twist and turn, so knowing just where to drop the bomb becomes increasingly harder as the tunnel goes deeper.

How about just functionally disabling the facilities, say by bombing entrances or lines of support? Well, if you can find those targets, you can do the mission with conventional weapons, and avoid the many undesirable long-term consequences of using nuclear weapons at all.

Avoiding the “self-detering” fallout of nuclear weapons used on buried targets does not appear feasible, either. It is true that a sub-megaton earth-penetrating bomb would produce less fallout than a surface-burst multi-megaton warhead, but it would still produce a very large crater and a lot of fallout. The scenario cited in the June article of an attack on North Korean underground facilities “...spreading radioactive fallout across the Sea of Japan and on our allies, the Japanese,” could not be avoided. Moreover, given the uncertainties about locations, contents, and configurations of buried facilities, multi-weapon attacks would probably be deemed necessary, producing that much more fallout.

**Military sites placed in urban settings.** We are having a hard time envisaging a military target in an urban setting for which even a low-yield nuclear weapon would be appropriate (except perhaps in retaliation for a prior nuclear attack on ourselves). If we could locate such targets, why would we not use precision-guided conventional munitions against them? If the targets were too hard for conventional explosives, why wouldn’t the necessary nuclear yield be “self-detering?”

**Mobile threats.** If highly valued assets actually could not be buried deeply enough to escape nuclear destruction, a viable alternative for many capabilities would be mobility and concealment. Biological weapons could be hidden in any truck or any farmhouse. If our intelligence were good enough to locate particular mobile targets (the U.S. inability to find SCUD missiles in the first Gulf War is not encouraging), then we would be able to destroy those targets with conventional weapons. If only the general vicinity of targets could be identified, then barrage attacks would be necessary, requiring either a great many low-yield weapons or somewhat fewer large-yield weapons, but collateral damage could be extensive. In any case, the additional deterrent benefit of the nuclear threat seems small.

Beyond a call for new capabilities, the June article says that current “...warheads are expensive and difficult to manufacture, are costly to maintain, and require materials that pose environment, safety, and health challenges.” The question of stockpile reliability and cost is the subject of a whole other debate, not addressed by Speed and May and not central to the June article. We are going to duck that one here, but agree that it is an important debate to have.

## Recommended Reading

The following articles provide more analysis than is possible in the space of an ACG News & Views article:

- *Dangerous Doctrine*, Speed and May article cited in the text
- *What are Nuclear Weapons For? Recommendations for Restructuring U.S. Strategic Nuclear Forces*, Sidney D. Drell and James E. Goodby
- *Missions for Nuclear Weapons after the Cold War*, Ivan Oelrich
- *Earth Penetrating Nuclear Warheads against Deep Targets: Concepts, Countermeasures, and Consequences*, Ivan Oelrich, et al

We could find no comparably thorough unclassified analyses supporting the position of the June *News & Views* article. Closest, but with many generalities and little analysis, is Keith Payne, “The Nuclear Posture Review: Setting the Record Straight” *Washington Quarterly*, Summer 2005.

A related issue (addressed by Speed and May but not by the June article), is the argument that the U.S. pursuit of more “credible” (read “usable”) nuclear capabilities will undermine the global nuclear nonproliferation regime. The usual rebuttal to that argument is that prospective nuclear powers do not decide to go after the weapons primarily because of U.S. weapons capabilities. Perhaps true, but the real issue is whether U.S. nuclear weapons policies will help or hinder U.S. attempts to get international cooperation in attempting to constrain those countries from the outside (e.g. sanctions, export controls, interdiction, intelligence).

We think it is in the national interest to have an open debate on the future role of nuclear weapons. The concluding assertion in the June article that “Papers such as Speed’s and May’s can have the effect of pushing the nation toward additionally devaluing the importance of the nation’s nuclear stockpile...” misses the point that it is the end of the Cold War, as well as technological advances in conventional weapons, that have “devalued” nuclear weapons. The further charge that the Speed/May article could “...encourage those that would challenge the resolve of U.S. policymakers...” simply begs the debated question of whether the new nuclear capabilities advocated would really do anything at all in the other direction.

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Finally, the assertion that the article could demoralize “...the elite individuals that work to maintain and enhance the nation’s nuclear arsenal” of course hits home here at Sandia. But the question we end with is: will not that morale be best sustained by the most realistic possible understanding of the actual roles the weapons can and cannot play in the pursuit of national security? ■